

Arijit Ghosh

PhD (Chronobiology)

Chronobiology and Behavioural Neurogenetics Lab
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Curriculum Vitae

Education

2022

Graduate student, Chronobiology and Behavioural Neurogenetics Lab, Neuroscience Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, Karnataka, India.

2016

Integrated M.Sc., Homi Bhabha National Institute, program conducted at National Institute of Science Education and Research, Bhubaneswar, Orissa, India.

Life Sciences, CGPA 8.43 out of 10

2011

Higher Secondary Education, Ramakrishna Mission Vidyalaya, Narendrapur, Kolkata, India.

With Science Major (Biology, Chemistry, Physics, Mathematics), West Bengal Board of Higher Secondary Education, 86.6 Percent marks.

Publications (peer-reviewed)

*(asterisk) : First OR joint first author

From PhD

- *Arijit Ghosh, Vasu Sheeba. "VANESSA – Shiny apps for accelerated time-series analysis and visualization of *Drosophila* circadian rhythm and sleep data". *Journal of Biological Rhythms*, (2022), in press.
- *Arijit Ghosh, Pragya Sharma, Shephali Dansana, Vasu Sheeba. "Evidence for co-evolution of masking and circadian phase in *Drosophila melanogaster*". *Journal of Biological Rhythms* 36, no. 3 (2021): 254-270.
- Lakshman Abhilash, Arijit Ghosh, and Vasu Sheeba. "Selection for timing of eclosion results in co-evolution of temperature responsiveness in *Drosophila melanogaster*". *Journal of Biological Rhythms* 34, no. 6 (2019): 596-609.

From master's dissertation, collaborations and others

- Tushar Kanta Acharya, Satish Kumar, Nikhil Tiwari, *Arijit Ghosh, Ankit Tiwari, Subhashis Pal, Rakesh Kumar Majhi, Ashutosh Kumar, Rashmita Das, Abhishek Singh, Pradip K. Majhi, Naibedya Chattopadhyay, Luna Goswami, Chandan Goswami. "TRPM8 channel inhibitor-encapsulated hydrogel as a tunable surface for bone tissue engineering". *Scientific Reports* 11, 3730 (2021).
- Nabanita Roy Chattopadhyay, Koustav Chatterjee, Nikhil Tiwari, Sudipta Chakrabarti, Sushil Kumar Sahu, Sankar Deb Roy, Arijit Ghosh, R Rajendra Reddy, Piyanki Das, Sudipa Mal, Basab Bijay Karnar, Ashok Kumar Das, Sam Tsering, Komri Riba, Zoreng puii, Eric Zomawia, Y Indibar Singh, Amol Ratnakar Suryawanshi, Abhishek Kumar, Dipyaman Ganguly, Chandan Goswami, Tathagata Choudhuri. "TLR9 polymorphisms might contribute to the ethnicity bias for EBV-infected Nasopharyngeal Carcinoma". *iScience* 23, no. 3 (2020): 100937.
- Somdatta Saha, Samikshya Sucharita, Rakesh Kumar Majhi, Ankit Tiwari, Arijit Ghosh, Sunil Kumar Pradhan, Bijay Kumar Patra et al. "TRPA1 is selected as a semi-conserved channel during vertebrate evolution due to its involvement in spermatogenesis". *Biochemical and biophysical research communications* 512, no. 2 (2019): 295-302.

- Sridhar Sanyasi, Satish Kumar, **Arijit Ghosh**, Rakesh Kumar Majhi, Navneet Kaur, Priyanka Choudhury, Udai P. Singh, Chandan Goswami, and Luna Goswami. **"A modified polysaccharide-based hydrogel for enhanced osteogenic maturation and mineralization independent of differentiation factors"**. *Macromolecular bioscience* 17, no. 3 (2017): 1600268.
- Somdatta Saha, ***Arijit Ghosh**, Nikhil Tiwari, Ashutosh Kumar, Abhishek Kumar, and Chandan Goswami. **"Preferential selection of Arginine at the lipid-water-interface of TRPV1 during vertebrate evolution correlates with its snorkeling behaviour and cholesterol interaction"**. *Scientific reports* 7, no. 1 (2017): 1-21.
- ***Arijit Ghosh**, Navneet Kaur, Abhishek Kumar, and Chandan Goswami. **"Why individual thermo sensation and pain perception varies? Clue of disruptive mutations in TRPVs from 2504 human genome data"**. *Channels* 10, no. 5 (2016): 339-345.
- Rakesh Kumar Majhi, Somdatta Saha, Ashutosh Kumar, **Arijit Ghosh**, Nirlipta Swain, Luna Goswami, Pratyush Mohapatra et al. **"Expression of temperature-sensitive ion channel TRPM8 in sperm cells correlates with vertebrate evolution"**. *PeerJ* 3 (2015): e1310.

Manuscripts under preparation

***(asterisk) : First OR joint first author**

- ***Arijit Ghosh**, Abhilash Lakshman, Vasu Sheeba Vijay Kumar Sharma, KL Nikhil. **"Genetic architecture of divergent chronotypes of *Drosophila* eclosion rhythm - a next-generation genome sequencing study"**.
- ***Arijit Ghosh**, Vasu Sheeba. **"A large-scale screening of the DrosDel collection reveals plausible loci involved in phasing of *Drosophila* eclosion rhythm"**.

PhD research (August 2016 - June 2022)

Title	Genetic and behavioural characterization of early and late phase of emergence in populations of fruitflies <i>Drosophila melanogaster</i>
Supervisor	Professor Sheeba Vasu, Chronobiology and Behavioural Neurogenetics Lab, Neuroscience Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, Karnataka, India

Master's dissertation research (May 2014- June 2016)

Title	Exploring role of thermosensitive TRP channels in osteogenesis
Supervisor	Professor Chandan Goswami, National Institute of Science Education and Research, Bhubaneswar, Orissa, India

Short term projects

2012 **Summer trainee**, with Professor Chandan Goswami, NISER Bhubaneswar, India.

Project title: Bioinformatics analysis of evolution of TRP channels in vertebrates.

2013 **Summer trainee**, with Professor Richa Rikhy, IISER Pune, India.

Project title: Mitochondrial distribution and morphology in developing *Drosophila melanogaster* embryos.

2014 **Summer trainee**, with Professor Naibedya Chattopadhyay, CSIR-CDRI Lucknow, India.

Project title: Osteogenic induction using pharmacological modulators of TRP channels.

Achievements and Awards

- Awarded the SRBR Merit Award by the Society for Research on Biological Rhythms Awards Committee (2020)
- Awarded the Global Diversity Fellowship by the Society for Research on Biological Rhythms Awards Committee (2020)
- Awarded Bhagwati Devi Memorial Award for best oral presentation at the International Symposium on Biological Rhythms (2019) organized by the Indian Society for Chronobiology

- Awarded CSIR Junior Research Fellowship (2016-2018) and CSIR Senior Research Fellowship (2018-Now) for graduate studies
- Awarded Best poster teaser award at in-house symposium at JNCASR 2017
- Awarded Best Student award at DST-SERB School in Insect Biology 2016
- Qualified in Graduate Aptitude Test in Engineering (GATE) 2016
- Ranked 26th and 32nd in LS category and 59th in JRF category in National Eligibility Test (NET), organized by Council of Scientific and Industrial Research, India (CSIR NET 2015-2016)
- Awarded 2nd prize in 1st International Conference on Translational Research for the poster titled "*Exploring the role of TRP channels in bone cells*"
- Received the prestigious DST-INSPIRE scholarship for my master's studies from Department of Science and Technology, Government of India

Conferences and Workshops attended

- Attended, gave an oral presentation, and helped organizing the International Conference on Chronobiology 2021, funded by IUSSTF and Indian Society for Chronobiology
- Attended 2020 International Chronobiology Summer School as a Teaching Assistant
- Attended and presented a poster at SRBR 2020, organized by The Society for Research on Biological Rhythms, won Global Diversity fellowship and SRBR Merit Award in the same
- Invited for an oral presentation at International Symposium on Biological Rhythms 2019, organized by the Indian Society for Chronobiology at CCSU, Meerut, India
- Attended and helped in organizing InSearch - Insects in Research symposium, 2018, 2019 and 2020, organized by the Clock Club, JNCASR, Bangalore, India
- Attended the International Symposium on Biological Timing and Health Issues in the 21st Century, 2017 at University of Delhi, Delhi
- Attended the Workshop on NGS data analysis and curation, 2017 at JNCASR, Bangalore
- Attended DST-SERB school in Insect Biology at Punjabi University, 2016 at Patiala, India
- Attended and helped in organizing 3rd Biennial Meeting of Probiotic Association of India, March 2016 organized by NISER, Bhubaneswar, India
- Attended and presented poster at 1st International Conference on Translational Research: From Basic Science to Clinical Application, February 2015 organized by KIIT, Bhubaneswar, India
- Attended 2nd meeting of Indian Sub-continental Branch of the International Neuropeptide Society, December 2015 organized by NISER, Bhubaneswar, India
- Attended 35th All India Cell Biology Conference (AICBC), December 2011 organized by NISER, Bhubaneswar, India
- Attended the coveted science camp VIJYOSHI (Vigayn Jyoti Shibir) organized by Indian Institute of Science, Bangalore, India in November 2011

Teaching and mentorship

Chronobiology

- Taught part of the basic chronobiology course at the Neuroscience Unit, JNCASR (3 weeks - 2018, 2019, 2021)
- Taught chronobiology practical course - timeseries analysis (3 weeks - 2018, 2019)
- Teaching assistant at the 2020 International Chronobiology Summer School (May-July 2020)

Basic and hands-on Statistics

- Taught the basic statistics part of Neurobiology practical courses at the Neuroscience Unit, JNCASR (2 weeks - 2018, 2019)

Trainee mentorship

- Mentored 2 summer trainees each in the summers of 2017, 2018, 2019 at JNCASR, 1 summer trainee in the summer of 2015 at NISER, and one short term trainee in 2015 at NISER
- Mentored 1 year master's dissertation research thesis of trainee (2019-2020) at JNCASR

Skills

Wet Lab

- *Immunostaining*: Cells, tissue; Immunoblotting, Fixed cell fluorescence imaging, live cell calcium imaging, live cell pH measurement, live cell mitochondrial potential dynamics, confocal microscopy
- *Cell line culture and assays*: Various bone cell line, macrophage cell line and neuronal cell line; Primary cell culture: Mesenchymal stem cell isolation and culture, Hematopoietic stem cell isolation and culture, calvarial osteoblast culture, Peritoneal macrophage isolation and culture, MTT assay, ALP assay, Mineralization assay of osteoblasts, PCR, RT-PCR
- *Fly work*: Maintenance, embryo isolation, staining and imaging, population maintenance, genetic crosses
- *Animal handling*: Rat, mice, and rabbit, dosing, bone marrow isolation, peritoneal macrophage isolation, calvaria isolation
- *Behavioral assays*: Locomotor activity assay, eclosion assay, oviposition assay, development time assay

Dry Lab

- *Advanced R* : Data wrangling, Visualization, NGS analysis, Time series analysis, Shiny app development
- *awk* : Data wrangling, NGS analysis
- *LINUX/UNIX* : Moderate usage, command line proficiency, High Performance Cluster (HPC) usage, job scheduling, bash scripting, working knowledge of PERL and Python
- *Sequence analysis, Homology modelling, Molecular phylogenetic analysis* : Proficient in analysis using MEGA, MODELLER, YASARA, PHYLIP
- *Molecular dynamics, docking* : Proficient in YASARA, VINA
- *Population genomics analysis* : Proficient in using FastQC, Trimmomatic, Popoolation, Popoolation2, SAMtools, Bowtie2, GO, VCFtools, and developing pipelines
- *Statistics* : Proficient in Statistica, R
- *Visualization* : Proficient in CIRCOS, advanced R, GraphPad Prism, Origin Pro, Sigmaplot
- *General computer skills* : Proficient in Microsoft Office, Adobe Illustrator, Adobe Photoshop, Adobe Lightroom, HTML
- *Code repository* : <https://github.com/orijitghosh>

Languages

Bengali **Native**

Hindi **Native**

English **Fluent**

Daily practice, all work performed in English, medium of education English

Interests

Hobbies Photography (Portrait, Landscape, Abstract)

Designing Photoshop, Illustrator, HTML, Website designing, Graphic designing, App development